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## **ABSTRACT**

**Title of Thesis: A COMPARISON OF DEADLY FORCE STATISTICS FROM  
THE NCHS AND FBI**

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**Degree and Year: Master of Arts in Criminal Justice and Criminology, 1994**

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Criminology**

Following Sherman and Langworthy's examination of the vital statistics and private data from police agencies, this work examines the differences between data for justifiable homicides by police using the supplementary homicide reports from the FBI and the mortality detail file from the National Center for Health Statistics (NCHS). The FBI data captured over 27% more cases than the NCHS data for the period 1976-1990. Additionally, variations in the number of cases captured from state to state followed predictable patterns when using variables emphasizing state size, such as population, general fund expenditure or state and local expenditures for police, as the independent variable.

94-149

**A COMPARISON OF DEADLY FORCE STATISTICS  
FROM THE NCHS AND FBI**

**by**

**Thomas Patrick Allison**

**Thesis submitted to the Faculty of the Graduate School  
of The University of Maryland in partial fulfillment  
of the requirements for the degree of  
Master of Arts  
1994**

**Advisory Committee:**

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## **Introduction**

In 1979, Sherman and Langworthy published an article entitled "Measuring Homicide by Police Officers" (Sherman & Langworthy, 1979). Given that the police have the power to kill citizens without due process of law, this represents a crucial area of inquiry.

Sherman and Langworthy's goal was to evaluate the accuracy of estimates of the number of justifiable homicides committed by police officers derived from death certificates compiled by the National Center for Health Statistics (NCHS) as part of the national vital statistics program. Their approach was both conceptual and empirical. The major element of their empirical investigation was a comparison of vital statistics estimates with police-generated estimates for a convenience sample of state and county jurisdictions. The sample included 8 states, and New York City, along with some of the county totals within New York City for selected years between 1970 and 1976. Overall, they found that the NCHS total was lower than the police generated data by 50 percent. In only 3 instances in the sample, which included 8 states and New York City, were the NCHS estimates higher than the police-generated estimates. They conclude that

... the NCHS data cannot be used to measure the national incidence of homicide by police officers.

Since the police-generated data do not encompass the

entire nation, it is safe to say that this country simply does not know how many of its own citizens it kills each year under the authority of the state. (p. 553)

This was a ground-breaking effort because, at the time, the vital statistics were generally regarded as the most accurate data source when compared with other systems such as the Federal Bureau of Investigation's Uniform Crime Reporting System or that collected independently in local police jurisdictions. However, as the authors themselves noted, their empirical analysis was hindered by the lack of national data and the selective nature of the data available for analysis.

The research reported here extends the Sherman-Langworthy work by conducting a more comprehensive comparison of death-certificate-based estimates of police justifiable produced by the NCHS with estimates produced by the FBI, as part of the Uniform Crime Reports (UCR). Data currently available makes possible comparisons for all U.S. states for the fifteen-years period 1976 to 1990.

This research has four objectives:

1. To illustrate differences between the two data sources by comparing estimates of the number of justifiable homicides by police officers in U.S. states.



2. To illustrate some of the deficiencies of both systems.
3. To show that the estimates do not consistently favor one data source over the other, but, vary according to a predictable pattern.
4. To suggest further research and improvements in reporting procedures.

The discussion begins with a description of the two national data collection systems, the Mortality Detailed Files (MDF) compiled by the NCHS and the Supplementary Homicide Report (SHR) data collected by the FBI. The results section describes (1) trends and year-to-year variation in the two data sources and (2) investigates the association between the difference between the SHR and MDF estimates and state characteristics such as population, state wealth, the presence of and type of death investigation system, UCR reporting programs and the current state of the criminal justice information system within the state. Finally conclusions are drawn.

### **The Two National Data Collection Systems**

There are two nation data collection systems that attempt to count the number of killings by police in the United States: the Supplementary Homicide Report (SHR) from the Federal Bureau of Investigation's Uniform Crime Reporting program and the homicide portion of the Mortality Detail Files (MDF) compiled by the NCHS from the national

vital statistics mortality registration system. Although they measure a conceptually similar universe, the data collection procedures are quite different. It will be useful to summarize the main feature of each data collection system.

### **Supplementary Homicide Report**

The Supplementary Homicide Report is a part of the Federal Bureau of Investigation's Uniform Crime Reporting Program. Law enforcement agencies submit SHR reports monthly providing information about homicide incidents, victims and offenders that occurred in their jurisdiction.

The Uniform Crime Reporting Handbook, which provides instructions for completing UCR forms, clearly instructs agencies to provide information on justifiable homicides on the SHR form.

On the side of the form entitled "1.a. Murder and Non negligent Manslaughter," details of all willful (non-negligent) killings would be recorded." Also included here will be justifiable homicides as defined in UCR, even though they occurred in connection with attempts or actual commissions of felonies (Federal Bureau of Investigation, 1984, p. 63).

The public-use data tapes distributed by the FBI include a "circumstance" code that allows the user to identify homicides committed by law enforcement officers in the performance of their duty. Additional information about the incident available on the tape including the age, sex, race and ethnicity for both the offender and the

victim, the weapon used, relationship of the victim to the offender and the circumstances of the incident (FBI, 1984).

For this research justifiable homicides by police officers 1976-1990 were extracted from the public-use tapes and aggregated by state.

### **Sources of Error in the SHR**

For present purposes errors may be divided into two major types (1) errors of coverage and (2) errors of classification. Coverage errors occur when a law enforcement agency fails to file the SHR form or failed to record an eligible homicide on the form. Errors of classification occur when the form is filed and the homicide is recorded, but it is not correctly classified as a justifiable homicide by a police officer.

Several features of the UCR reporting system probably create classification errors.

1. Some agencies do not file the SHR forms at all. The public-use tapes provide no information about the number or characteristics of agencies that do no report. Also homicides that occur in the Federal jurisdiction such as Indian reservations are not covered in UCR system.
2. The Uniform Crime Reporting Handbook indicates that justifiable homicides should be included on the SHR form, but does not explicitly say that justifiable homicides by law enforcement officers should be included. Since the general context is an

enumeration of criminal homicide and justifiable homicides are not criminal homicides, confusion may arise as to which cases should be included.

3. It is likely the department within an agency that investigate criminal homicides are not the same as the one that investigate homicides by police officers. Homicide detectives would likely investigate criminal homicides, while a branch such as internal affairs would investigate killings by police. Since homicides by police officers are rare (the largest number reported for an entire state over the period of this research was 138 for California in 1990), the unit responsible for investigating these incidents will undoubtedly have other primary duties that capture most of their time and resources. Therefore, depending on how information is polled and collected within each department while completing the UCR, justifiable homicides may be omitted from the official count because the department investigating them may not be included due to a lack of involvement with "criminal homicides" (Geller & Scott, 1992, p. 34-5). .
4. Exclusion of a justifiable homicide category in Return A introduces another opportunity for error in the UCR. It is reasonable that the person completing the Return A, due to lack of experience and/or training, may be unaware of the need to include justifiable homicides in the count under criminal homicide. This situation would be aggravated in those agencies that infrequently

have justifiable homicides by police (a category that would include all but a small number of police agencies across the nation). Although this error will likely be caught by supervision or upon attempting to complete the SHR, which specifically mentions including justifiable homicides, there still remains a chance for data to be omitted or not counted correctly. This could occur if the justifiable homicide by police was only included in the SHR, which is consistent with the directions: "List below specific information for all offenses shown in item 1a of the monthly Return A. In addition, list all justifiable killings of felons by a citizen or by a peace officer in the line of duty" (FBI, 1984). This direction could reaffirm that no mentioning of the justifiable homicide by police was required or necessary on the Return A. Admittedly, this represents a small risk considering all the variables that would have to take place, but, when it could be so easily corrected, it is worth addressing. Also, it is important to note that when you are dealing with approximately 500 cases or fewer a year, the omission of a few cases can have a significant impact.

5. Finally, the Uniform Crime Reporting Handbook gives many examples of criminal homicides and justifiable homicides (FBI, 1984, 7-9). However, it would be useful to see these examples followed up for the SHR. Although completion of the UCR and SHR is not a complex or daunting task to follow, in the interest of accurate data, it

would be helpful to show the progression of the various examples from start to finish.

### **Mortality Detail File**

The vital statistics data on homicide are derived from death certificates compiled by the NCHS. The cause of death on the certificates are classified according to definitions established by the International Classification of Diseases (U. S. Department of Health and Human Services, 1989).

Homicides by the police fall under the heading "Legal Intervention," (codes E970-E978), defined as "injuries inflicted by the police or other law enforcement agents, including military on duty, in the course of arresting or attempting to arrest law breakers, suppressing disturbances, maintaining order, and other legal action" or "legal execution" (U. S. Department of Health and Human Services, 1989, p. 1045)

The specific "E codes" are those in the range E970-E978. These would include:

- E970 ("Injury due to legal intervention by firearms "),
- E971 ("Injury due to legal intervention by explosives"),
- E972 ("Injury due to legal intervention by gas"),
- E973 ("Injury due to legal intervention by blunt object"),
- E974 ("Injury due to legal intervention by cutting and piercing instrument"),
- E975 ("Injury due to legal intervention by other specified means"),
- E976 ("Injury due to legal intervention by unspecified means"),
- E977 ("Late effects of injuries due to legal intervention")

E978 ("Legal execution") (U. S. Department of Health and Human Services, 1989, p. 1045-47).

For this research deaths due to legal intervention for the period 1976-1990 were extracted from the Mortality Detail File (MDF) and aggregated by state.

### **Sources of Error in the Mortality Detail File**

Sherman and Langworthy identify six potential flaws with the mortality data collection system. It is useful to review them here.

The first flaw is that the medical diagnosis on death certificates in general is poor. They illustrate the problem with two studies done in the early 1950's that showed vast discrepancies and errors. The first, examined a sample of Pennsylvania death certificates and found that 39 percent of the information on the death certificates came from "'sketchy" diagnostic information, with 18 percent having an equally likely or preferred diagnosis." The second study examined 1,889 autopsies in Albany, New York and found that as many as 59 percent of homicide and suicide deaths could have had incorrectly classified circumstances of death (Sherman & Langworthy, 1979, p. 548).

The second flaw is "...widespread lack of the coroners' awareness of, support for, and legal obligation to comply with the system's request for the full information necessary to code the causes of death according to ICD categories" (Sherman & Langworthy, 1979, p. 548). Further support for this point is provided by a review of the Medical

Examiners' and Coroners' Handbook on Death Registration and Fetal Death Reporting. Although the purpose of this book is to explain, in detail, the proper method for filling out the standard death certificate, nowhere in the book does it make any mention of how the information will be used in supporting data tabulation nor does it make any reference to the ICD codes. (U.S. Department of Health and Human Services, 1987).

The third is unclear instructions for filling out the standard death certificate. At the time of Sherman and Langworthy's article, the section of the death certificate that covered "How Injury Occurred" had room for only five or six words. Despite its small space, medical-legal officers were encouraged to be complete with their detailing of the circumstances causing the death while using as few words as possible (Sherman & Langworthy, 1979, p. 549).

Although the standard certificate of death has been periodically updated, it still only contains enough room for a very brief statement of the circumstances precipitating the injury (U.S. Department of Health and Human Services, 1987). An example cited used "a pulmonary hemorrhage due to stab wounds" being described as "stabbed by a sharp instrument" (Sherman & Langworthy, 1979, p. 549). It should be obvious that these facts are insufficient to provide an exact ICD code since they could fall into any number of different categories from self-inflicted (suicide), justifiable homicide by police (if the event occurred during a struggle with officers for control of a suspects weapon), homicide or undetermined. The point being that the "handbook"



does a poor job of setting an adequate example. Additionally, further review of the "handbook" provided no more informative examples for personnel in the field to use as a reference (U.S. Department of Health and Human Services, 1987). Essentially, the guide merely perpetuates the problem instead of helping to eliminate it.

The fourth flaw identified was the often close relationship between the local police and the medical-legal officers. Sherman and Langworthy assert that this relationship can establish unofficial controls over the medical-legal office that can hold more influence than established procedures when determining cause of death (Sherman & Langworthy, 1979, p. 549). An interesting aspect of this is illustrated in personal experience from Great Falls, Montana. The county coroner for Cascade County is also the sheriff. While this would seem to make sense in smaller communities from a fiscal perspective, it could present some problems with regards to oversight of the police.

The fifth flaw identified is that of a lack of consistent procedures even within the same office. In an interview with Michael Baden, M.D., the chief medical examiner of New York City at the time of the article, Sherman & Langworthy found that those examiners that had been around the longest tended to leave out police involvement in homicides because they thought it created an "unnecessary onus" for the police (Sherman & Langworthy, 1979, p. 549).

Finally, the last flaw identified is the problem with interpretation of death certificates. Essentially this comes down to

fitting each case into a specific category. When a situation arises where a case could go into more than one category, a decision must be made that may or may not be consistent from day-to-day and year-to-year. For example, Sherman & Langworthy point out a hypothetical situation where a police officer, while off-duty, is forced to shoot and subsequently kill his wife in self-defense (Sherman & Langworthy, 1979, p. 550). Obviously this situation could be interpreted as a legal intervention if you go under the assumption that a police officer is always "essentially" acting in the line of duty, or it could be classified as a justifiable homicide by a civilian. It is pointed out that a letter received at the time of the article from Harry Rosenberg, Chief Mortality Branch, National Center for Health Statistics, would not classify such a scenario as a legal intervention (Sherman & Langworthy, 1979, p. 550). However, the policy changes and attitude variations that can arise over an extended time period of time may introduce inconsistency into the data.

### **Study Data and Methods**

#### **Estimates of Homicides by Police Officers**

##### **Data Processing Decisions**

The SHR data and the MDF data were obtained from the Interuniversity Consortium for Political and Social Research. The number of homicide victims classified "justifiable homicides by police officers" in the SHR and "legal interventions" in the MDF were counted

for each state and the District of Columbia for each year between 1976 and 1990.

### **Missing Observation**

Over the 15 year study period, the SHR data was missing for five cases spread among three states. These were Montana for 1987, Kentucky for 1988 and Florida for 1988 through 1990. No cases were missing from the NCHS data or other sources. The missing SHR data and its corresponding pair in the NCHS data was omitted from the analysis. When the analysis was run using the average yearly difference between the FBI and NCHS data, those states that were missing information were averaged only for those years with data present in both systems. For example, the worst case scenario, Florida, had an average difference determined by summing its yearly differences and dividing by 12 instead of fifteen.

### **Independent Variables**

#### **Population**

The population for each state in 1980 was collected because that census year was near the middle of the study period (U.S. Bureau of the Census, 1993). The relationship between state population and the difference between the SHR and MDF estimates was investigated under the assumption that those states with larger populations would be more formal and therefore more likely to comply with data collection rules and procedures. Similarly, smaller states may rely on more informal procedures.

### **State and Local Expenditures for Police**

State and local expenditure for police for 1979 was obtained for each state from the Statistical Abstract of the United States (U.S Bureau of the Census, 1982). This is investigated under the theory that those states that spend more on police would likely facilitate the acquisition of technology and manpower that makes easy submission of UCR information possible. Essentially, a \$2000 computer or records clerk is easier to justify and acquire when dealing with a budget of millions than when dealing with a budget of thousands. It is also realized that state and local expenditures for police is likely to be highly correlated with population, therefore it will be examined on its own and in the overall analysis including population. If it turns out to be collinear with population then it will only be discussed on its own.

### **State General Fund Expenditures**

State General Fund Expenditures for 1980 was obtained from the State and Metropolitan Area Data Book, 1982 (U.S Bureau of the Census, 1982). The motivation to use this was the same as that for state and local expenditures for police. Both were investigated since it was unsure which would make a better representation of a states wealth. As with police expenditures, state general fund expenditures is likely to be highly correlated with both population and police expenditures, therefore, it will also be examined independently and with the other two

variables. Once again, should it prove to be collinear, it will only be discussed on its own against the difference in the FBI and NCHS data.

### **State Death Investigation System**

The type of state death investigation system for each state was classified according to the 9 categories system described by Coombs, Parrish & Ing in Death Investigation in the United States and Canada, 1990. These types are:

1. State Medical Examiner,
2. District Medical Examiner,
3. County Medical Examiner,
4. State Medical Examiner and County coroners/Medical Examiners,
5. mixed District Medical Examiners and County Coroners,
6. mixed District Coroners and County Medical Examiner,
7. mixed County Medical Examiners/Coroners,
8. District Coroners
9. County Coroners

### **State-Level UCR Program**

The next variable used in this research is the absence or presence of a state program for compiling UCR information (FBI, 1992). This variable was used with the assumption that those states with an active program would likely achieve better results. However, it was found that all but 6 states have active programs. This combined with no readily available means for determining the strength of the individual programs allows for little variation and as such will likely shed little insight during analysis.

### **Presence of Criminal Justice Information System**

The last variable to be examined is the state of the criminal justice information system for each state. This was gauged using a 1993 report from Search, Inc. for the Bureau of Justice Statistics. This did not lend itself to easy quantification. The only variable that had any focus toward the topic at hand while providing much variability was the percent of automated files for the state's offender criminal history file (U.S. Department of Justice, 1993). It is hoped that this will provide a measure of the state's automation, which in turn would measure its ability to easily support UCR submittals.

### **Results**

#### **General Differences**

The general pattern is that the FBI system captures more justifiable homicides by police officers than does the NCHS system. This has been the case for every year from 1976-1990 (Table 1). This point is extremely interesting since they are independent measures of the same variable. Another interesting pattern in the data was that although the FBI captured more total cases, the NCHS captured more cases in more states (Table 2). In 31 of the 50 states, the NCHS data had higher numbers than the FBI. Additionally, in Alaska there was no difference in the data.

The closest that the two sources came to parity was in 1987 with a difference of just 13 cases or 4.5% more for the FBI data. The largest

discrepancy was found in 1980 with the FBI reporting 152 more cases than the NCHS or approximately 50% more cases than in the NCHS data (Table 1). Over the entire analysis period, there were 27.6% more cases in the FBI system than in the NCHS system. This amounts to a difference of 1173 cases over the 15 years in question.

There was no systematic change found between the two data sources over time. The NCHS data ranges from a low of 245 cases in 1988 to 343 cases in 1979. The FBI data ranges from 300 cases in 1987 to 458 cases in 1980. Moreover, neither series indicate a statistically significant trend over time.

As in Sherman and Langworthy's sample, California is the most influential case in the sample. Out of the 1173 additional cases identified by the FBI and not by the NCHS, California contributes 665, or nearly 57% (Tables 2 and 3) This is compared with California only supplying approximately 24% of all cases for the FBI data and 15% for the NCHS.

### **Population As a Predictor of Difference**

Initial inspection of the data suggested that population is related to the differences between FBI and NCHS counts (Table 2). It was theorized that larger states may capture more cases in the SHR data than smaller ones because of a variety of factors. These might include:

1. a larger budget, making the acquisition of people, facilities, programs and technology that would assist in completing the necessary data acquisition more obtainable;
2. larger police forces, that by sheer size would be more inclined to produce data on their activities, whereas smaller population centers would have much smaller forces that would undoubtedly find little additional resources to expend on outside distractions such as UCR submittals.

From this it should take no more than a small leap of faith to conclude that the 9,000 police and sheriff agencies out of 15,000 that report to the FBI under the UCR program (Geller & Scott, 1992, p. 41) are likely those that represent the larger agencies and subsequently the larger population bases in the nation. This point is further supported by FBI data that shows a 90% population coverage for its UCR program. This meaning that although the UCR program is missing responses from approximately 40% of all police agencies, those that do respond encompass approximately 90% of the population.

The initial regression analysis supports this argument; population was a statistically significant predictor of the difference with a p-value of less than .0001, or more clearly the probability of this happening by random chance being less than 1 in 10,000. However, a couple of problems with the data cannot be dismissed without further inquiry. Referring to Figure 1, the two data points to the right



represent California, both an outlier and influential observation, and New York, an influential observation.

In order to be certain of the overall effect, California and New York were dropped both singularly and then together in order to determine whether they were having an unduly large effect on the analysis. The original analysis showed a slope of .017 and F value of 77.7 with resulting p-value of less than .001. When dropping California, the new slope was .0093 with an F value of 49.3 and resulting p-value of less than .001. Therefore, although California is clearly influencing the overall equation as illustrated by the nearly 50% change in regression slope, the overall relationship still remains strong and significant.

When New York is dropped from the equation, the new slope was .0189 with F value of 84.86 and resulting p-value of less than .001. With its minimal influence on the regression slope (a mere 9% change) and its tendency to work against the model (illustrated by the increase in slope and F value), New York still does not threaten the model significantly.

Finally, under the assumption that New York and California were acting together to pull the model in a unwarranted direction, both were dropped and the analysis was done again. It was found that the new slope was .0087 with a F value of 37.35 and resulting p-value of less than .001. Although this shows the largest drop of the three scenarios (a

drop of approximately 50%), it still fails alter the basic relationship.

These findings indicate that population size is a good predictor of variation in the discrepancy between FBI and NCHS counts of justifiable homicides by the police. Population explained 62% of the variation in the discrepancy. Clearly, population is a strong predictor of the trends found in the average difference between the FBI and NCHS data.

#### **State Wealth as a Predictor of Difference**

State wealth was examined for essentially the same reasons as population size. It was thought that those states with a larger amount of wealth would be able to afford the items, people, programs and technology that would assist and push getting involved in the reporting of data to the FBI under the UCR program. It is also offered as an alternative or more direct representation of essentially the same theory being examined with population.

The only problem was to determine an adequate measure of state wealth. Two measures of the construct were found. The first is the value of the state's general fund for 1980. The other was the amount of state and local expenditures for police for 1979 for each state. As one would expect the variables are highly correlated ( $r^2 = 0.92$ ).

Additionally, both were highly correlated with the average difference between the FBI and NCHS data. The only difference between the two was

that the  $r$  for the state general fund data was slightly higher at 0.70 than police expenditures at 0.57. Therefore, either was useful for inclusion in this analysis. Likewise, both were highly correlated with population, making an analysis with either combined with population essentially useless. However, this is really not that large a surprise given the similar concept behind all three variables. If anything, these results point toward the more general characterization that the size of the state (represented either through population or monetary means) represents a strong predictor for variations in the differences found in the FBI and NCHS data.

A closer examination of state general fund produced influential observations along the same lines as population (Figure 2). The two most extreme cases to the right of the graph are California, at the top right, and New York, below the regression line. Once again these cases were dropped both individually and together. The initial analysis resulted in a slope of .0268 and F value of 113 with resulting p-value of less than .001. When dropping California, the slope became .0129 (a decrease of approximately 52%) with a F value of 33.59 and p-value of still less than .001. When dropping New York, the slope became .0316 (an increase of 19%) and F value was 167 with p-value of less than .001. When dropping both, the slope was .015 (a decrease of 44%) and F value was 23.59 with resulting p-value of less than .001. Clearly both California and New York have strong influences on the analysis (California being the largest of the two). However, since the goal of this research is to

identify whether the relationship exists between state general fund and the difference found in the two data sources and not to predict that difference, the statistically significant findings found for each case, as was found with population, don't threaten the conclusions of a clear relationship between the two.

When examining the scatter plot of police expenditures and the difference between the FBI and NCHS data (refer to Figure 3 on page 30) similar findings were also obtained. The slope in the overall analysis was .2363 with an F value of 64.11 and resulting p-value of less than .001. The two outliers identified in this case were once again New York (the far right below the regression line) and California (in the upper right corner). Dropping California produced a slope of .117 (a decrease of 50%) and F value of 44.41 with resulting p-value of less than .001. Dropping New York produced a slope of .347 (an increase of 47%) with F value of 143.94 with resulting p-value of less than .001. Finally, dropping both cases yielded a slope of .174 (a decrease of 26%) with F value of 44.52 and resulting p-value of less than .001. Once again the outliers in the analysis don't threaten the conclusions of a strong relationship between police expenditures and the average difference between the two data sources by state.

### **State Programs as a Predictor of Difference**

The next area to be examined was whether programs within the state would predict the difference between the FBI and NCHS data. As

explained earlier, the state death investigation system and the presence/absence of a UCR program for a state were used as independent variables. The state death investigation system was broken down into 9 categories as detailed previously. Unfortunately, these values never obtained significant F values during analysis. Additionally, only in a few instances were any of the categories able to achieve significant results as t scores when combined with other variables. This occurrence was likely the result of simple random chance in that by running the data in enough variations and combinations, it would produce a statistically significant value by chance.

The state UCR programs held little hope of achieving significant values from the start of the analysis. This is due to the fact that all but 6 states have UCR programs. Therefore, due to its lack of variation and large percentage of programs nation-wide, it was unlikely to be significant and, indeed, followed that course during analysis. Whether on its own, or combined with other factors, such as population, state wealth or state death investigation system, the state UCR program never achieved anything even remotely approaching significant results.

The state criminal justice information system was introduced with the desire of representing the level of automation found in a state's criminal justice system. Although started out with good intentions, it was soon found that it was quite difficult to obtain a real good measure for this construct. Finally, the analysis was run using the percent of automated files present for each states offender's file. This was used

since it was the only data which had any variation and still combined the essence of what was attempting to be studied in the research. However, once again this variable produced negligible results. It, like the state death investigation system and UCR programs, never achieved significant levels whether using it on its own, with population, state wealth or the state programs variables.

## **Conclusions**

### **Objectives**

This work had four primary goals, each of which were achieved. The biggest achievement of this work was the finding of the large discrepancy between the FBI and NCHS data on justifiable homicides by police. It was found that the FBI's UCR data far surpassed the NCHS's ability to capture total number of cases for police use of deadly force. This is an interesting situation given that most of the research community generally shuns this as a usable source of data due to it being submitted voluntary (Matulia, 1985, p. 10). However, this general attitude should come as no surprise given that the collector of the data, the FBI, also questions the reliability of the data (Sherman & Langworthy, 1979).

In contrast, it was also noted that the NCHS data had higher numbers of total cases captured in more states than the FBI. Based upon this if a data source is needed to examine an aspect of justifiable homicides by police, then the FBI data would hold an advantage.

However, it does not represent a source without flaws and as such its shortcomings in regard to state to state variations should be examined and taken into account. What it clearly points to is that a complex mechanism is occurring in the two data sources that clearly goes beyond the scope of this research. Although, state size is a good predictor of this mechanism, it doesn't really explain it. With that in mind, future researchers should use caution in accepting one source over the other or a mix of the two.

The second achievement of this work is the illustration that both data sources suffer major obstacles. The NCHS data is abysmal for use in this research, being plagued through out by obstacles that prevent cases of justifiable homicides by police from being entered into the proper category. Additionally, perhaps more disturbing is that these "missing" cases are likely finding their way into other categories (possibly as homicides or undetermined) and likely introducing error into more research efforts. In addition to this, the general lack of documentation urging coroners and medical examiners to provide adequate information to classify individual cases as justifiable homicides by police (a sorry discrepancy in the handbook published to provide instructions for filling out death certificates) and the omission of the ICD codes for justifiable homicides by police from the instruction manual published by the department of health and human services for classifying the underlying cause of death (U.S. Department of Health and

Human Services, 1990) shows a complete disregard for accuracy in this vital area of inquiry.

Not to be left out, the FBI has its own problems. The fact that only 60% of the police and sheriff agencies in the nation submit reports to the FBI under the UCR program leaves a lot of room for error and missed cases (a conclusion which is widely supported by those states that had higher numbers from the NCHS). The underlying fact is that the FBI data captures more of the total cases of justifiable homicides by police presently and therefore offers the most attractive source for research, although even it does not represent what could be classified as a ideal source. As stated previously, it captures less cases in a majority of states than the NCHS data. Perhaps the best way to classify it is as the better of two flawed sources. Beyond this is the fact that the NCHS program has the potential to be the better of the two based on its ability to capture nearly a complete sample of all deaths nation wide. However, what draws it down is that it presently does not function as it was set up to function.

The third objective was to find a pattern for the difference between the FBI and NCHS data. Essentially, the only pattern evident from this research stems from the relative "size" of the state whether measured as wealth or population. Once again this falls well into the theory that smaller states will lack the time, personnel, resources and technology that would make supporting the UCR program easier. Admittedly, the data suffers from outliers and influential observation



that have enormous impacts on the analysis, however, these never threaten the significance of the model, therefore, leaving the general conclusions of an effect intact.

It could be argued that by using the difference between the two data sources as the dependent measure in this research is another reflection of state size. In essence, using a characteristic to prove itself. With this in mind, the relative difference between the two data sources was also briefly examined by using the ratio of FBI to NCHS cases. This would seem to give the states with smaller numbers a much larger influence on the overall model (which was the case) and would yield results in conflict with those found using the straight difference between the two. However, upon examination, even these held the same general results although with not as much strength. With this in mind, the relative difference was put aside and the straight difference was used as the dependent variable.

### **The Future**

In 1979 Sherman and Langworthy took the first critical examination of the data being used to research police use of deadly force. As stated previously, this was done by effectively showing the shortcomings of the vital statistics data based on independent data collected from police agencies. The research presented in this paper has advanced this inquiry one step further by examining this data in

comparison with the only other large-scale, national source for this information, the UCR program. As such, this research represents a broadening of the original inquiry which gives future researchers some information on how to approach the data available in this vital area of inquiry.

As with most things, the more you know, the more question you have. This trait does not escape in this research. It clearly provides a great deal of impetus for more research in this area. First off, California represents too large of an enigma in this area of inquiry to pass up without study. Despite being the most populated state, it stands out by an enormous margin for having a larger count for the FBI data than the NCHS data. This points to the fact that if there is anything wrong with the NCHS system it will likely be found in a close examination of California. Perhaps this could represent the place to start a general cleaning up of the system, however, that could not really be determined until it is analyzed more closely. Additionally, it might be advisable to find out what they are doing right in California with the UCR program and pass it on to other states. While New York also stands out in much of the analysis, it doesn't come close to achieving the departure from norm found with California.

Next, the statistics on justifiable homicides offer limited value in and of themselves. They are only a small subset of the larger area of police use of deadly force. However, the only method currently available to study police use of deadly force on a large-scale, national

level is by using justifiable homicides by police as your measure and assuming it does not deviate from police use of deadly force significantly. However, it would be immensely more accurate to establish a standard definition and instrument for directly measuring police use of deadly force. A possible expansion of the UCR to capture shots fired by police (whether a victim was killed, injured or missed altogether) as well as other situations that are deemed to represent deadly force would promote more accurate and useful research in this area.

On that same line of reasoning, analysis of police use of deadly force has had only minimal scrutiny by researchers. Outside of examining it from the perspective of racial inequality, it has had almost no examination. This is an event that represents the only form of state execution that happens before due process. Additionally, it benefits none of the parties involved. As such it warrants more analysis so that we might discover ways to minimize its occurrence, whether through wide-spread adoption of new policies or expanded usage and research into the area of less-than-lethal force.

Lastly, the FBI essentially only knows what is happening in 60% of the nation's police agencies as far as feedback from the UCR is involved. This has effects well beyond the narrow field of study of justifiable homicides by police. However, just examining it from this perspective, it would be unnerving to find that California's outlier existence is not an anomaly, but, is a direct result of it being the only

state providing a full accounting of its cases. It could be that the research we are doing is severely in error due to a lack of complete reporting in the data being used. With that in mind, before we rush out and spend enormous quantities of money to fight the war on crime perhaps we should spend a small amount to fight the war on ignorance of crime. By providing incentives to the 40% of the nation's law enforcement agencies and federal jurisdictions (Indian reservations, military facilities, etc.) that don't report UCR data to the FBI, we could drastically reduce the level of uncertainty found in our primary source of crime data. Only through efforts like this will we be able to develop an accurate understanding of the situation and react in an appropriate manner. It has long been known that the first rule of war is to know your enemy, for how can you fight something you do not understand or know? You need look no further than Vietnam, poverty and drugs to answer that question.

Table 1  
Yearly Totals for FBI minus NCHS

Year	FBI Total	NCHS Total	Total Difference
1990	377	303	74
1989	363	314	49
1988	339	245	94
1987	300	287	13
1986	302	262	40
1985	319	264	55
1984	333	283	50
1983	415	265	150
1982	372	280	92
1981	375	282	93
1980	458	306	152
1979	435	343	92
1978	309	260	49
1977	308	263	45
1976	411	286	125
Total	5416	4243	1173

Table 2  
Total Difference and Average Difference by State Sorted by Population

State	Pop. (x1000)	Sum of Diff.	Average Diff.	State	Pop. (x1000)	Sum of Diff.	Average Diff.
CA	23,668	665	44.33	OK	3,025	-15	-1
NY	17,558	129	8.6	IA	2,914	-12	-0.8
TX	14,229	157	10.47	CO	2,890	20	1.33
PA	11,864	84	5.6	AZ	2,718	-12	-0.8
IL	11,427	125	8.33	OR	2,633	-1	-0.07
OH	10,798	-17	-1.13	MS	2,521	-23	-1.53
FL	9,746	160	13.33	KS	2,364	-7	-0.47
MI	9,262	42	2.8	AR	2,286	-7	-0.47
NJ	7,365	45	3	WV	1,950	-10	-0.67
NC	5,882	-40	-2.67	NE	1,570	8	0.53
MA	5,737	-18	-1.2	UT	1,461	-17	-1.13
IN	5,490	-54	-3.6	NM	1,303	-23	-1.53
GA	5,463	-38	-2.53	ME	1,125	-3	-0.2
VA	5,347	-19	-1.27	HI	965	10	0.67
MO	4,917	40	2.67	RI	947	-13	-0.87
WI	4,706	10	0.67	ID	944	-2	-0.13
TN	4,591	36	2.4	NH	921	-2	-0.13
MD	4,217	36	2.4	NV	800	-28	-1.87
LA	4,206	-1	-0.07	MT	787	-11	-0.79
WA	4,123	-5	-0.33	SD	691	-2	-0.13
MN	4,076	14	0.93	ND	653	-8	-0.53
AL	3,894	7	0.47	DE	594	-1	-0.07
KY	3,661	-21	-1.5	VT	511	-1	-0.07
SC	3,122	19	1.27	WY	470	-3	-0.2
CT	3,108	-20	-1.33	AK	402	0	0
				Total		1173	80.71

TABLE 3  
Total Difference and Average Difference by State

State	Total Difference	Average Difference	State	Total Difference	Average Difference
AL	7	0.47	MT	-11	-0.79
AK	0	0	NE	8	0.53
AZ	-12	-0.8	NV	-28	-1.87
AR	-7	-0.47	NH	-2	-0.13
CA	665	44.33	NJ	45	3
CO	20	1.33	NM	-23	-1.53
CT	-20	-1.33	NY	129	8.6
DE	-1	-0.07	NC	-40	-2.67
FL	160	13.33	ND	-8	-0.53
GA	-38	-2.53	OH	-17	-1.13
HI	10	0.67	OK	-15	-1
ID	-2	-0.13	OR	-1	-0.07
IL	125	8.33	PA	84	5.6
IN	-54	-3.6	RI	-13	-0.87
IA	-12	-0.8	SC	19	1.27
KS	-7	-0.47	SD	-2	-0.13
KY	-21	-1.5	TN	36	2.4
LA	-1	-0.07	TX	157	10.47
ME	-3	-0.2	UT	-17	-1.13
MD	36	2.4	VT	-1	-0.07
MA	-18	-1.2	VA	-19	-1.27
MI	42	2.8	WA	-5	-0.33
MN	14	0.93	WV	-10	-0.67
MS	-23	-1.53	WI	10	0.67
MO	40	2.67	WY	-3	-0.2
			Total	1173	80.71

Figure 1

Scatter Plot of Difference and Population  
with Regression Line

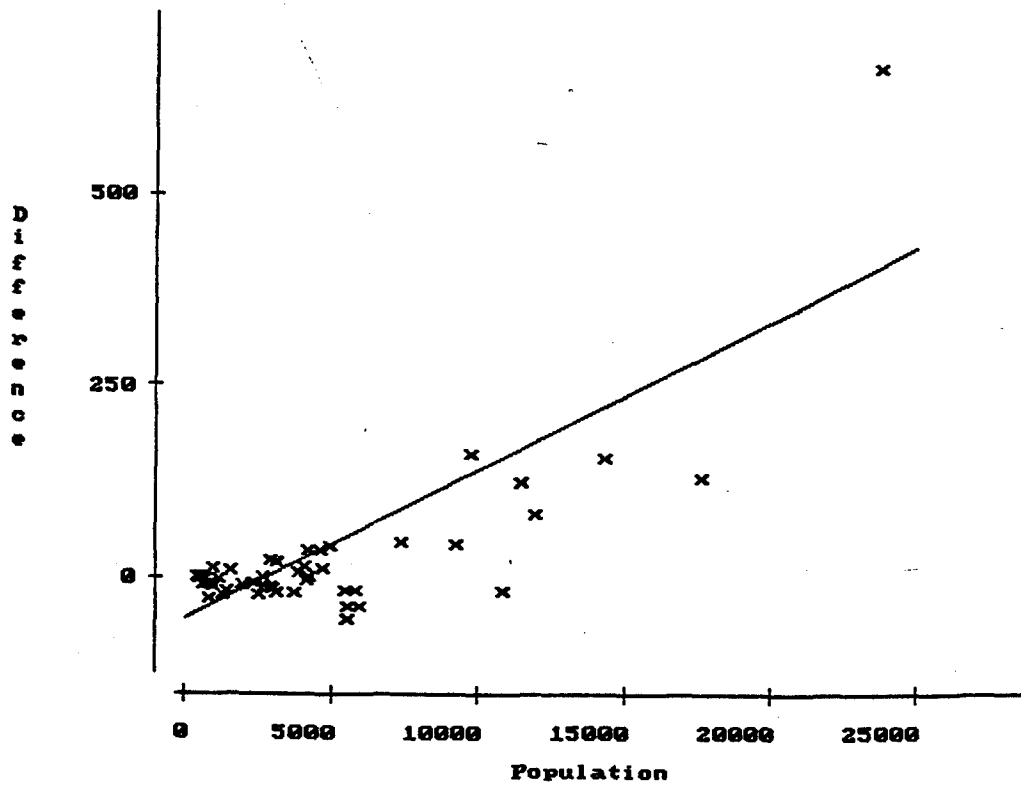




Figure 2

Scatter Plot of Difference and State General Fund  
with Regression Line

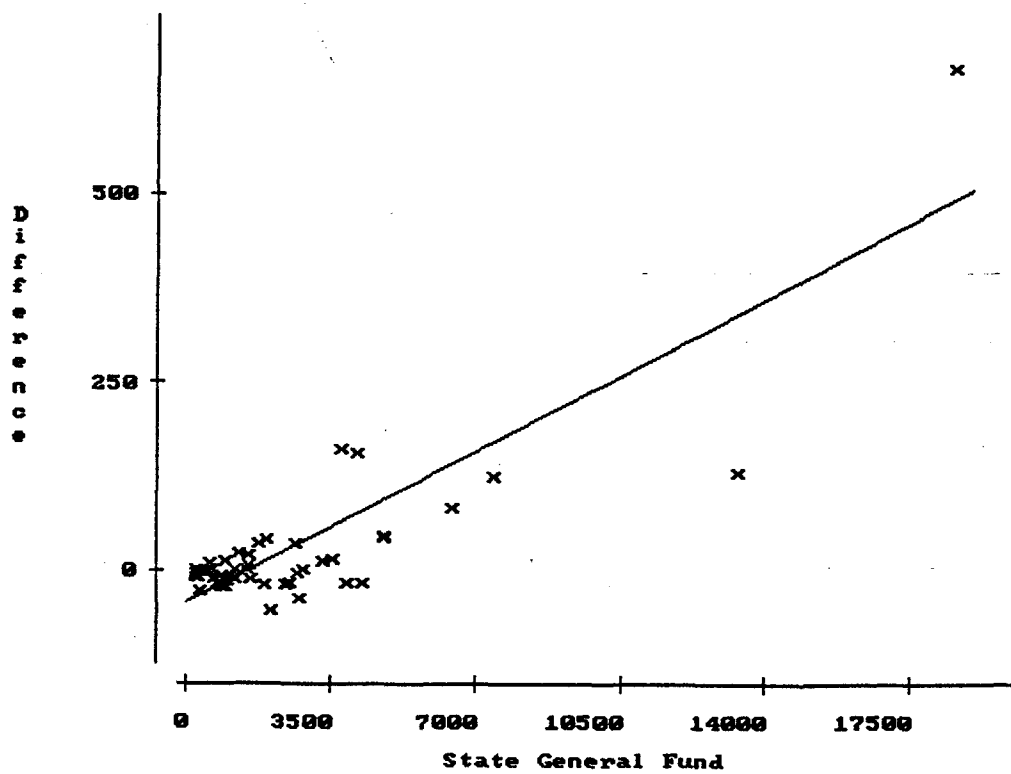
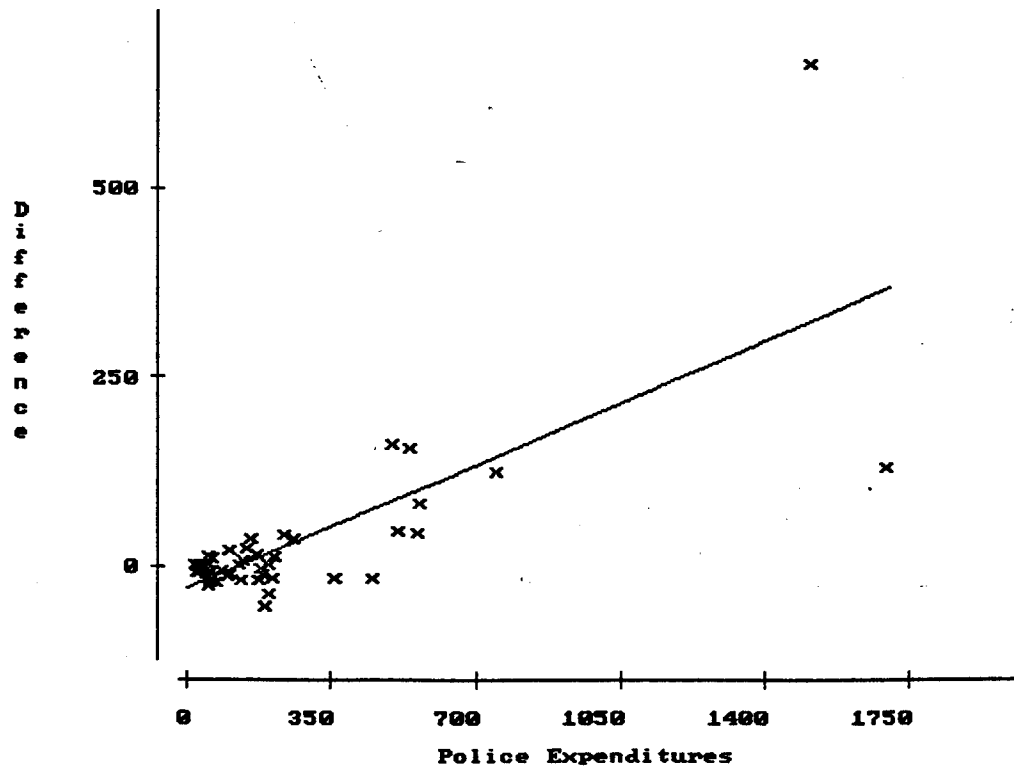


Figure 3

Scatterplot of Difference and Police Expenditures  
with Regression Line



## **References**

- Federal Bureau of Investigation. (1984). Uniform crime reporting handbook. Washington DC: U.S. Government Printing Office.
- Federal Bureau of Investigation. (1992). Crime in the United States, 1992. Washington DC: U.S. Government Printing Office.
- Geller, W. A. & Scott, S. S. (1992). Deadly force: What we know- A practitioner's desk reference on police-involved shootings. Washington DC: Police Executive Research Forum.
- Matulia, K. J. (1985). Deadly force policy and procedure (2nd ed.). Arlington, VA: International Association of Chiefs of Police.
- Sherman, L. W., & Langworthy, R. H. (1979). Measuring homicide by police officers. Journal of Criminal Law and Criminology 70, 546-560.
- U.S. Bureau of the Census. (1982). State and metropolitan area data book, 1982. Washington DC: U.S. Government Printing Office.
- U.S. Bureau of the Census. (1982). Statistical abstract of the United States: 1982-83 (103rd ed.). Washington DC: U.S. Government Printing Office.
- U.S. Bureau of the Census. (1993). Statistical abstract of the United States: 1993 (113th ed.). Washington DC: U.S. Government Printing Office.
- U. S. Department of Health and Human Services. (1987). Medical examiners' and coroners' handbook on death registration and fetal death reporting. Hyattsville, MD: DHHS Publication.
- U. S. Department of Health and Human Services. (1989). International classification of diseases (9th rev. ed.). Washington DC: DHHS Publication.

- U. S. Department of Health and Human Services. (1990). Death investigation in the United States and Canada, 1990. Washington DC: Department of Health and Human Services.
- U. S. Department of Health and Human Services. (1990). Instruction manual, part 2a: Instructions for classifying the underlying cause of death, 1991. Washington DC: Department of Health and Human Services.
- U. S. Department of Justice. (1993). Survey of criminal history information systems, 1992. Washington DC: Bureau of Justice Statistics.